

Nirmal Sarkar

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Department of Biology,
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EDUCATION

Ph.D. in Biology

Utah State University, Logan, UT, USA (January 2025 – Present)

GPA: 3.72/4.00 (through Spring 2026)

Master of Technology (M.Tech) in Bioengineering

Indian Institute of Technology Guwahati, Assam, India (2022 – 2024)

CGPA: 9.08/10.00

Master of Technology (M.Tech) in Environmental Biotechnology

Jadavpur University, West Bengal, India (2018 – 2020)

CGPA: 8.11/10.00

Bachelor of Technology (B.Tech) in Biotechnology

Techno India University, West Bengal, India (2014 – 2018)

CGPA: 8.35/10.00

PUBLICATIONS

Sarkar, N., Mahajan, A. A., Pathak, S., Seth, P., Chowdhury, A., Ghose, I., Das, S., Chowdhury, R., Bera, A., Dey, A., Dutta, A., Majumder, I., Ghosh, S., Rajendran, R. L., & Gangadaran, P. (2025). Beta-glucans in biotechnology: A holistic review with a special focus on yeast. *Bioengineering*, 12(4), Article 365.

<https://doi.org/10.3390/bioengineering12040365>

Ghosh, S., Dey, A., **Sarkar, N.**, Majhi, S., Barua, S., Bera, A., & Hazra, S. (2025). Role of prebiotics and probiotics in the protection against cervical cancers. In M. Faiyazuddin & S. Ashique (Eds.), *The role of probiotics in cancer management* (pp. 135–155). Apple Academic Press. <https://doi.org/10.1201/9781003610748-5>

Jhahan, E., Bhattacharyya, S., Chaudhuri, A., **Sarkar, N.**, Akhtar, S., & Chaudhuri, P. (2022). Optimization and application of UVC irradiation for prevention of fungal biodeterioration of vegetable tanned and chrome tanned leather. *Journal of Leather Science and Engineering*, 4, Article 28. <https://doi.org/10.1186/s42825-022-00104-4>

TEACHING EXPERIENCE

Graduate Teaching Assistant for Biology I Laboratory

Department of Biology, Utah State University, Logan, UT, USA (August 2026 – Present)

Teach one 2.75-hour laboratory section weekly; grade assignments; prepare and maintain laboratory materials.

Graduate Teaching Assistant for Biology II Laboratory

Department of Biology, Utah State University, Logan, UT, USA (January 2026 – May 2026)

Taught two 2.75-hour laboratory sections weekly; graded assignments.

Graduate Teaching Assistant for Biology I Laboratory

Department of Biology, Utah State University, Logan, UT, USA (August 2025 – December 2025)

Taught two 2.75-hour laboratory sections weekly; graded assignments.

AWARDS

Third Prize, Poster Presentation, BioSangam 2024, MNNIT Allahabad, Prayagraj, India, February 2024.

CONFERENCE PRESENTATIONS

Sarkar, N., Mussaji, A., & Zhan, J. (2025, November 8). Heterologous expression and functional characterization of NADPH-dependent FMN reductase and hydrolase enzymes from the chlorflavonin biosynthetic pathway of *Aspergillus candidus* in *Escherichia coli* [Poster presentation]. Intermountain Biological Engineering Conference, Logan, UT, United States.

Sarkar, N., Mussaji, A., & Zhan, J. (2025, September 12–13). Heterologous expression and functional characterization of NADPH-dependent FMN reductase and hydrolase enzymes from the chlorflavonin biosynthetic pathway of *Aspergillus candidus* in *Escherichia coli* [Poster presentation]. Institute of Biological Engineering Conference, Salt Lake City, UT, United States.

Sarkar, N., Mukherjee, P., Ramesh, A., & Sivaprakasam, S. (2024, August 9–11). Functional expression and characterization of D-lactate dehydrogenase homologs from *Lactobacillus delbrueckii* subsp. *bulgaricus* in *Lactococcus lactis* for D-lactic acid production [Oral presentation]. IIT Guwahati Research and Industrial Conclave 2024, Guwahati, Assam, India.

Sarkar, N., Mukherjee, P., Ramesh, A., & Sivaprakasam, S. (2024, February 23–25). Functional expression and characterization of D-lactate dehydrogenase homologs from *Lactobacillus delbrueckii* subsp. *bulgaricus* in *Lactococcus lactis* for D-lactic acid production [Poster presentation]. BioSangam 2024: 6th International Conference on Bio-Technological Intervention for Health, Agriculture and Circular Economy, Prayagraj, Uttar Pradesh, India.

PROJECTS AND RESEARCH EXPERIENCE

Water Solubilization and Solubility Optimization of Hagfish Intermediate Filament Proteins

Justin Jones Lab, Department of Biology, Utah State University, Logan, UT, USA

(August 2026 – Present)

Production of Resveratrol in a Multichamber Bioreactor using *E. coli* co-culture

Metabolic Engineering Lab, Department of Biological Engineering, Utah State University, Logan, UT, USA

(September 2025 – August 2026)

Heterologous Expression and Functional Characterization of NADPH-dependent FMN Reductase and Hydrolase Enzymes from the Chlorflavonin Biosynthetic Pathway of *Aspergillus candidus* in

E. coli

Metabolic Engineering Lab, Department of Biological Engineering, Utah State University, Logan, UT, USA
(February 2025 – September 2025)

Cloning and Expression of D-Lactate Dehydrogenase Homologs of

***Lactobacillus delbrueckii* subsp. *bulgaricus* in *Lactococcus lactis* for D-Lactic Acid Production**

Department of Biosciences and Bioengineering, Indian Institute of Technology Guwahati, Assam, India
(July 2023 – July 2024)

Development of DNA Aptamers using SELEX for the Identification of *Mycobacterium* sp.

Altanostics Labs Private Limited, IIT Guwahati Research Park, Assam, India
(May 2023 – July 2023)

In vitro study of Fungicidal Activity of UV-C on Airborne Fungal Spores

School of Environmental Studies, Jadavpur University, West Bengal, India
(July 2019 – July 2020)

Isolation and Identification of Dye-Degrading Bacteria from Wastewater Samples in Delhi NCR

Helix Biogenesis, Noida, Uttar Pradesh, India
(March 2018 – May 2018)

TECHNICAL SKILLS

Molecular Biology and Cloning: Genomic and plasmid DNA isolation, purification, and quantification; PCR and qPCR; primer design and optimization; TA cloning; Gibson Assembly; restriction digestion; competent cell preparation; bacterial transformation; blue-white screening; colony PCR

Protein Expression and Biochemistry: Recombinant protein expression; Ni-NTA affinity purification; SDS-PAGE; enzyme activity assays; protein solubilization and refolding; dialysis-based buffer exchange and solubility optimization

Analytical Techniques: HPLC method development and compound analysis; UV-Vis spectroscopy; agarose gel electrophoresis; SDS-PAGE-based analysis of soluble and insoluble protein fractions

Bioprocessing and Biomaterials: Microbial cultivation and co-culture; protein formulation and buffer optimization; recombinant protein biomaterial processing

SELECTED GRADUATE COURSEWORK

Downstream Process in Biological Engineering
Synthetic Biological Engineering
Biochemical Engineering
Spectroscopic Analysis of Organic Compounds
Biotechniques

Advanced Bioreactor Engineering
Advanced Bioengineering
Metabolic Engineering
Biomaterials